ENVIRONMENTAL ISSUES:

A CITY OF WINNIPEG STATUS REPORT

1991

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Foreword

Environmental Issues: A City of Winnipeg Status Report - 1991 represents a summary of the many and varied activities of the City of Winnipeg relative to environmental concerns.

This report has been prepared at the direction of the Executive Policy Committee of Council which at its October 3, 1990 meeting requested a comprehensive annual report on environmental issues describing activities and issues facing each department in terms of background, current progress or trends, and future directions.

Much of what is outlined in this report is discussed in greater detail in other City reports. However, this is the first time this information has been compiled and summarized in one document. It represents a commitment from the City to analyze and review its environmental stewardship. ***Environmental Issues*** will be updated and issued annually.

The intent of this report is twofold: to serve as an information base for decision making purposes, and to inform the public about City activities, particularly where these have not been widely publicized.

The report highlights positive initiatives taken by the City to improve the environment.

While every attempt was made to ensure the comprehensiveness of ***Environmental Issues***, this report makes no claim to be all-inclusive. Even as it was in the final stages of production, other reports were being updated or prepared, recommendations made, and/or decisions taken regarding a number of environmentally related issues.

Environmental Issues: A City of Winnipeg Status Report - 1991 was prepared by the Research and Policy Analysis Branch of the Board of Commissioners, with extensive assistance and cooperation from civic departments, Manitoba Environment, and from the Environmental Protection Office of Environment Canada in Winnipeg.

GLOBAL ISSUES

While all the issues discussed in this report have an impact on the global environment to various degrees, they are essentially local concerns.

Global warming and ozone depletion however, affect everyone regardless of where they live on the planet. Although Winnipeg's contributions to the problems of global warming and ozone depletion are minimal - on a global scale - the City is actively taking measures to ensure it is part of the solution. In this respect, the City is following the maxim: ***"Think globally, act locally."***

GLOBAL WARMING

Global warming is a projected increase in average temperatures around the world due to increased amounts of carbon dioxide (CO_2) and methane (CH_4) in the atmosphere, primarily caused by the burning of fossil fuels: gasoline, coal, natural gas. Chlorofluorocarbons (CFCs) also contribute to a limited degree. If left unchecked, global warming may have devastating effects; potentially turning current productive land, including Winnipeg, into near deserts, while coastal areas may be submerged as polar ice caps melt.

City of Winnipeg departments are working to reduce carbon dioxide and methane emissions wherever possible. Through the City's *Energy Management Programme*, City generated carbon dioxide emissions have been reduced by over 11 360 tonnes since 1986 by turning down thermostats and using heat recovery systems. The closing of **Winnipeg Hydro's** Amy Street coal-fired Steam Plant means 47 000 tonnes less fossil fuel burned per year and a reduction of 115 000 tonnes per year of carbon dioxide emissions.

Many scientists believe that even moderate destruction of the Amazon rain forest, which produces about 20% of Earth's oxygen, will accelerate the pace of global warming. In response, **City Council** passed a resolution that prohibits the City from purchasing any item containing exotic woods from the Amazon rain forest.

Other Canadian cities, such as Toronto, Vancouver and Regina have set a goal of a 20% reduction of 1988 carbon dioxide emission levels by the year 2005. Because trees take carbon dioxide out of the air and give off life sustaining oxygen, Toronto is increasing the number of trees planted annually in the city. Calgary is also planting more trees and is converting its city fleet vehicles to

cleaner burning propane and/or natural gas. As yet Winnipeg has not set a goal for the reduction of carbon dioxide emissions, nor is the City considering changing the fuel of its fleet vehicles and buses (See **Air Pollution** for more information). The City has an ambitious tree planting programme, with over 4 200 trees planted in 1990.

The cost to the City for reducing carbon dioxide emissions has been very low. In fact, through the *Energy Management Programme*, the reduction of 11 360 tonnes of carbon dioxide through the avoidance of burning natural gas has actually saved the City over $850,000. By closing the Amy Street Steam Plant, the City's heating costs will be reduced by $250,000 annually, against an initial cost of $2,000,000.

HOW YOU CAN HELP THE ENVIRONMENT

You can reduce carbon dioxide emissions by:

- Using your car less often and keeping your vehicle tuned-up,
- If you are purchasing a new vehicle, consider a smaller, more fuel efficient model, or one powered by propane or diesel if you do a lot of driving,
- Upgrade the insulation in your home and install weather-stripping around doors and windows,
- Lower the thermostat to 20°C.

OZONE DEPLETION

Chlorofluorocarbons (CFCs) and halons are widely used chemicals that have been linked to the depletion of the Earth's protective ozone layer. If this depletion is allowed to continue, incidence of skin cancer and damage to genetic material will increase. CFCs are found in many products such as refrigerators, air conditioners, solvents, sterilants, halon fire extinguishers, rigid foams and in the production process of flexible foams. Vehicle air conditioners are major contributors to CFCs in the environment.

Many governments around the world are taking initiatives to control the release of CFCs into the atmosphere. The "Montreal Protocol", an international CFC reduction treaty, was signed in 1987 to address this global issue. In a recent amendment, the Protocol calls for the complete phase out of CFCs and halons by the year 2000. The Canadian Government's *Green Plan* set as its objective the complete elimination of controlled CFCs by 1997, a full three years ahead of the world target.

In 1989 a City *Task Force on Ozone Depleting Substances* reviewed the City's own facilities for CFC and halon use. It found that most CFCs are used in refrigeration and air conditioning equipment, and in the sterilization process at the **Municipal Hospital**. About 10% of the total are halons, found in the fire extinguishing systems which protect the City's main computers, sensitive electronic equipment, and City archives. A small amount was found in solvents that are used to clean electronic parts.

On March 15, 1991 Manitoba Environment released draft regulations on Ozone Depleting Substances that go further to address the problem than any regulations developed thus far in Canada. The City must meet any provincial regulations that are proclaimed. Some of the control measures in these regulations that affect the City of Winnipeg and the date they go into effect are:

- Mandatory labelling of refrigeration and air conditioning equipment (July 1, 1991),

- Mandatory recovery and recycling of halons from fire extinguishers (December 31, 1991),

- Mandatory recovery and recycling of CFC's from all types of refrigeration and air conditioning equipment (December 31, 1991),

- A ban on the use of halons in the testing of fire extinguishers (June 30, 1992),

- Mandatory recovery and recycling of CFCs used as a sterilant (June 30, 1992),

In 1990, an *Advisory Committee* was formed to implement the recommendations of the City's *Task Force on Ozone Depleting Substances*. To meet provincial and national regulations, the *Advisory Committee* recommends that the City:

- Purchase a leak detection system and a portable refrigerant recovery recycling unit for $7,000.

- Ensure that existing and new service agreements with refrigeration service and repair contractors adhere to Environment

Canada requirements.

- Convert chillers (large air-conditioning systems) at the Centennial Library, City Hall, Public Safety Building, Transit Administration Building and other civic buildings to operate on new alternative ozone friendly refrigerants. To convert three of the larger chillers will cost approximately $30,000.

- Use air leakage tests instead of environmentally damaging halon "dump tests" to check Halon 1301 fire suppression systems.

The **Purchasing Department** has already implemented another of the report's recommendations not to purchase furniture or carpeting manufactured with CFCs, and to take into consideration a product's ozone depletion potential as part of the purchase decision.

HOW YOU CAN HELP THE ENVIRONMENT

- Use air conditioning contractors that use refrigerant recycling equipment.

- Use fibreglass, fibre board or cellulose types of insulation instead of rigid foam which contains CFCs (some foams now coming into the marketplace may contain acceptable substitutes).

- Purchase only those pieces of furniture, carpet underlay and other cushioning materials that have not been manufactured with CFCs (an alternative is to use natural or synthetic fibrefill in cushioning).

- Use water as a solvent.

- Use hand pump or spray bottle systems to clean electronic equipment, not aerosols that may contain CFCs.

A *Pilot CFC Recovery Project* was launched in June, 1991 in East Kildonan and Transcona. Its aim is to gather data on the costs, potential savings, and problem areas associated with CFC recovery, and to heighten public awareness. Instead of disposing old refrigerators and freezers at landfills or scrap yards where used CFC refrigerant can escape into the atmosphere, for the length of the project residents can take or arrange for pick up of old refrigerators to have the

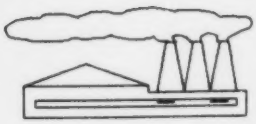
refrigerant recovered and recycled. The City is sharing the costs of this programme with Manitoba Hydro and Manitoba Environment.

Winnipeg Hydro's Rental and Service Section has acquired CFC recovery equipment, commonly called a "vampire", to recover, clean and recycle CFC refrigerant back into the refrigerators and freezers that they service for the general public and the City.

Winnipeg's efforts in this regard are similar to those in other Canadian cities. Regina has a purchasing policy to minimize ozone depleting substances and collects and reuses CFCs from its civic properties. Regina is also considering the establishment of a recovery depot to collect refrigerant from salvaged refrigerators and air conditioners. Calgary has appointed a CFC task force to examine CFC use and prepare a by-law to control their release into the environment. In comparison, Edmonton has decided to wait for provincial regulations to be enacted before preparing a CFC control by-law. Vancouver City Council has committed itself to the phase out of all ozone depleting chemicals by the year 1995, two years ahead of the federal government's goal of eliminating controlled CFCs by the year 1997.

POLLUTION

AIR POLLUTION



With little heavy industry to give off smoke and emissions, and a near constant wind blowing pollutants out of the city, Winnipeg's air quality is one of the best in Canada.

Current levels of common pollutants such as carbon monoxide (CO), sulphur dioxide (SO_2), lead (Pb) and nitrogen dioxide (NO_2) -all monitored regularly by the National Air Pollution Survey - are below or well below the maximum acceptable level. Rarely, ground level ozone, a pollutant caused by vehicle emissions reacting in sunlight, exceeds the acceptable one-hour limit. In the spring, rates of suspended particulates in the air are often high due to dust from sand whipped up by traffic (Manitoba Environment, 1991. pp.13-14).

The City has a responsibility to exercise environmental stewardship, and a number of civic departments have undertaken initiatives which contribute to cleaner air for all Winnipeggers.

Winnipeg Hydro

Winnipeg Hydro is working for cleaner air by replacing gasoline powered heavy vehicles with diesel powered ones as needed. Although diesel provides a more noxious smelling exhaust, it burns more efficiently, giving off less pollution.

The City-owned utility has also shut down a major generating source that released pollutants into the atmosphere, the coal-burning Amy Street Steam Plant (See **Global Warming** for more information.)

Winnipeg Transit

In 1990, with the slogan "Get on board...and get on route to a cleaner environment," Winnipeg Transit launched a public awareness campaign to encourage greater use of public transportation in the city, based on its environmental merits.

The campaign was based on a report of the Canadian Urban Transit Association which contains factual data on the environmental benefits of using public transit over automobiles. Specific advertisements within the campaign included the following information:

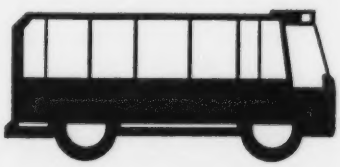
■ In rush hour, the average car carries 1.2 passengers. One transit bus carries the same number of passengers as 50 cars, and that can reduce air pollution by over 90%!

■ A car driver uses more energy and creates more air pollution in just 4 years than a transit passenger in 40 years!

■ Although a diesel-powered transit bus emits two to five times more pollutants by volume than a car, the benefit of the bus lies in its ability to replace as many as 50 cars.

Did you know?

■ One person using Transit for a year instead of driving an average of 4 500 km to and from work, saves the environment 9 kg of nitrogen dioxides, 10 kg of hydrocarbons and 1 200 kg of carbon dioxide!



■ In Canada, urban motorists account for over 40% of the energy used for transportation. Transit systems account for only 2%. Yet transit systems carry 15% of all persons travelling to and from work.

Other initiatives to improve air quality include the purchase of newer, more efficient bus engines to meet increasingly stringent exhaust emission standards, and the demonstration of alternative fuels.

Winnipeg Transit placed 30 of these new engines into operation in 1990 and is purchasing 30 more in 1991. These new, larger engines employ turbocharging, inter-cooling, and computer-controlled electronic fuel injection to reduce exhaust emissions.

As diesel engine manufacturers develop additional refinements, Winnipeg Transit will probably purchase yet even more efficient and cleaner burning bus engines over the next few years. In 1991, the United States Environmental Protection Agency ordered into effect stringent exhaust quality limits for bus engines. The Canadian government is considering adopting the same limits for 1995. Fuel refiners are working on cleaner burning fuels and diesel manufacturers are developing exhaust after-treatment devices (such as catalytic mufflers and regenerative particulate traps) to meet the stricter limits. Even if the U.S. limits are not adopted in Canada, it is likely that future bus purchases will include vehicles powered by these improved units.

Since January 1986, **Winnipeg Transit** has operated two methanol powered buses as part of a demonstration of the use of methanol as an alternative to diesel fuel in large engines, known as Project MILE (Methanol In Large Engines). These engines are specially modified versions of existing diesel bus engines. Methanol is being tested for two major reasons. First, methanol exhaust emissions are much cleaner than diesel ones and, second, methanol can be made readily from available Canadian resources like natural gas, wood, coal and organic wastes. Until December 1990, this programme was sponsored by Energy, Mines and Resources Canada. Now, until March 1993, the costs of operating these methanol powered buses will be shared between Winnipeg Transit, the Canadian Oxygenated Fuels Association, Detroit Diesel Corporation and Energy, Mines and Resources Canada.

Winnipeg was a pioneer in this field, and these two buses have accumulated more mileage operating on methanol than have any other buses in North America. Winnipeg Transit is monitoring the considerable development work that is now under way elsewhere into the use of alternative fuels in large engines.

Although the demonstration of methanol in Winnipeg has been technically successful, the present cost of methanol prevents it from being considered an economically viable alternative to diesel fuel.

Winnipeg Transit has no plans at present to add to the number of methanol or other non-diesel fuelled buses in its fleet, although some other Canadian cities have or are considering doing so. For example, the City of Medicine Hat is converting nearly its entire transit system (8 buses) to methanol fuel. Other alternative fuel demonstration projects under way in Canada include:

- Windsor is testing six methanol fuelled buses,
- Regina has two ethanol fuelled buses,
- Toronto has 25 natural gas fuelled buses,
- Mississauga has ten natural gas fuelled buses,
- Hamilton has 15 natural gas fuelled buses.

Transportation Planning

Plan Winnipeg calls for a balanced transportation plan where the role of public transit will accommodate the movement of large volumes of people along radial corridors to and from the downtown and other areas of concentrated development. The private automobile, on the other hand, would be used for cross-town movements from suburb to suburb or from suburb to work area. This should result in a more effective utilization of energy, reduction in air pollution, and minimization of investment requirements.

Since 1974, the City has been exploring the possibility of building a south-

west transit corridor parallel to Pembina Highway, linking downtown with the University of Manitoba area. Debate continues as to whether to pursue a $59 million busway, an $118 million trolley busway or a $243 million light rail transit system.

The south-west corridor is unique in that there are major trip attractions at both ends, there are major travel flows in both directions during peak hours, and at its south termination significant new developments are projected within the next two decades.

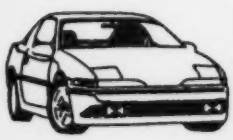
The proposed Southwest Transit Corridor would be the first phase of a rapid transit network. Other corridors are proposed for development in the longer term and include eastern, western, and northwest corridors.

Police Department

Between 1986 and 1988, the Police Department purchased and converted 36 vehicles to run on propane fuel, which provides very low hydrocarbon and carbon monoxide emissions. Since being placed in service, however, these vehicles have been plagued by poor winter starting and mechanical difficulties, prompting the department to stop examining propane as an alternative fuel. The last of the propane vehicles still in use are scheduled to be sold in 1992.

HOW YOU CAN HELP THE ENVIRONMENT

- Use Winnipeg Transit for work and shopping,
- Take a bicycle ride or a walk instead of going for a drive,
- Do not disconnect the catalytic converter on your car.



Streets and Transportation Department

Assessment of air quality related to vehicular emissions is included in the environmental impact assessment process undertaken for all major new transportation projects, such as the proposed Charleswood Corridor, consistent with the requirements of the Manitoba Environment Act (1988).

Since an automobile gives off most of its emissions during acceleration, more efficient traffic flow is beneficial to the environment. The Streets and Transportation Department places and times traffic signals to balance safety concerns with ease of driving. During the morning and afternoon peak periods (6:00 to 9:00 a.m.; 3:00 to 6:00 p.m.), green light intervals are extended along major arterial streets to reduce the number of stops. This favours traffic into the city centre in the morning and out of the centre in the afternoon.

Purchasing Department

To keep the engines of Winnipeg Transit and other City diesel vehicles running, the Purchasing Department's 1992 specifications state that diesel fuel purchased must be a new blend that gives off less harmful exhaust emissions. The specifications for the 1992 **Fire Department** fuel contract allow gasoline containing ethanol as an acceptable alternative.

Planning Department

By offering a locked room for day storage the Planning Department encourages its employees to use bicycles to come to work - a clean , non-polluting means of transportation that also offers physical fitness benefits.

Indoor Air Quality

In a climate such as Winnipeg's, it is not surprising that people spend up to 90% of their time indoors, especially in winter. As energy conservation measures cause buildings to be more tightly sealed and to have less fresh air circulated, indoor air quality has become an increasing concern. In fact, indoor air can be more polluted than outdoor air if chemicals such as second-hand smoke, formaldehyde, carbon monoxide, radon and others are present.

Radon in particular has received a great deal of attention lately. A colourless and odourless gas that has been linked to lung cancer, it enters buildings primarily through foundation cracks and sewers. Winnipeg has among the highest radon levels in Canada, and riverbank locations appear to have higher levels than other areas of the city. Radon regulation and abatement is the responsibility of the provincial government, which is participating in an Interprovincial Task Group on Radon Gas to evaluate the radon problem.

On request, the **Employee Occupational Safety and Health Division** tests for indoor air quality - including radon - in civic buildings. Almost two-thirds of all indoor air quality problems are the result of improperly maintained ventilation systems and closed fresh air dampers. Out of about 45 buildings tested for radon, only one had unacceptable levels of the gas; remedial action was taken.

The City of Winnipeg's *Smoking Policy* prohibits smoking in all civic buildings except in designated areas. All **Winnipeg Police** stations are now smoke-free and electronic air cleaners are used to remove smoke in the cafeteria of the **Social Services Department** at 705 Broadway.

SOIL AND WATER POLLUTION

River Water Quality

The Red and Assiniboine Rivers and the city's small streams are part of Winnipeg's heritage. Used for recreation, irrigation, transportation and as an outlet for treated wastewater, the quality of their waters is an important issue for

the city.

The citizens of Winnipeg and the City need to find a balance between public and aquatic health issues, the number of people who would benefit from making the rivers safer for recreation such as swimming and water skiing, and the cost to taxpayers to achieve these objectives.

The **Waterworks, Waste and Disposal Department** has spent approximately $94 million in the past five years to improve its sewage treatment facilities, and has proposed further expenditures of some $82 million over the next five years.

As it has since 1937, the City of Winnipeg treats its sewage before discharging it into the rivers. Today's sewage system has over 2 140 km of sewers, 96 pumping stations and 3 advanced sewage treatment plants. At present, 98% of Winnipeg's wastewater receives treatment before entering the rivers. The remaining 2% is accounted for by raw sewage mixed with storm water, carried through combined sewers and released into the rivers during and after heavy rain.

C.E.C. Hearings

In November 1991, after years of study by Winnipeg and the Province, Manitoba Clean Environment Commission (C.E.C.) hearings will help to establish water quality objectives for the Red and Assiniboine Rivers within and downstream of the City of Winnipeg. This is the next step in a process to license Winnipeg's wastewater treatment plants under the Manitoba Environment Act.

The Minister of Environment has indicated that at these hearings, the province intends to recommend bacterial limits for effluent from Winnipeg's sewage treatment plants, necessitating some form of disinfection. Ammonia is also likely to be a significant issue. Implementation of advanced treatment processes to treat and remove bacteria and ammonia at the City's three pollution control centres is dependent on the outcome of the hearings. Estimates of the benefits and costs of advanced treatment were prepared by the City for the hearings.

Water Quality Measurements

The quality of river water in Winnipeg is measured through various water quality parameters such as dissolved oxygen, fecal coliform bacteria and ammonia in the water.

Dissolved oxygen (DO) is simply the amount of oxygen in water. Oxygen is used by bacteria as they break-down organic matter like raw sewage. Water samples taken over the past decade show that Winnipeg's DO levels are good for a river in the Prairies, largely because of the high level of performance at the City's pollution control centres combined with active oxygen production from algae photosynthesis in the rivers. A major expansion and upgrading at the City's largest treatment facility, the North End Water Pollution Control Centre (NEWPCC), completed in 1988, improved DO levels in the Red River north of the city. The City's pollution control centres meet DO objectives for the lowest seven day flow expected to occur every 10 years, as specified by the Province.

Even at the lowest recorded DO levels, fish are in no danger of suffering from a lack of oxygen.

Generally, the amount of fecal coliforms (bacteria that are found in warm blooded animals) found in the water is a good indicator of the possible presence of pathogens that can cause gastrointestinal and other diseases.

Provincial guidelines for fecal coliforms state that activities involving direct contact with water (swimming, water skiing, sailboarding) should be done in water containing less than 200 fecal coliforms per 100 ml. Secondary water contact (boating, fishing, walking along the shore) is acceptable under the guidelines if the water contains less than 1 000 fecal coliforms per 100 ml. Manitoba is the only province in Canada to have secondary water contact standards.

Winnipeg's rivers contain coliforms in quantities well above the primary water contact guidelines. Upstream of NEWPCC, they are frequently 10 to 20 times that of the primary recreation guideline. Between 1980 and 1989, an average count of 3 200 fecal coliforms per 100 ml was recorded at the Redwood Bridge, while 12 200 fecal coliforms per 100 ml was registered at the North Perimeter Bridge, which is downstream of NEWPCC.

Costs

It is technically possible to reduce the amount of fecal coliforms in the rivers by treating the combined sewer system and/or disinfecting wastewater. To separate the combined sewers could cost an estimated $1 billion, while treatment of combined sewer overflow would cost between $420 and $740 million.

Another option involves disinfection by chlorination of treated wastewater prior to discharge. However, without replacing or modifying the combined sewers, raw sewage would still enter the rivers after rains, causing the amount of coliforms to exceed the provincial limits. Also, the amount of chlorine needed to control bacteria could have adverse side effects on aquatic life if not neutralized prior to discharge from the treatment plant. The cost of chlorination disinfection facilities would be approximately $13 million and take approximately 5 years to implement.

The North End Water Pollution Control Centre, which handles about 70% of the city's wastewater, is currently testing a pilot ultraviolet light disinfection process. The ultraviolet process does not require the use of chlorine gas, thus reducing the risk associated with use of this dangerous chemical. A complete ultraviolet light disinfection operation is estimated to cost $40 million to start.

Funds have been included in the 1992-1997 Capital Programme to implement disinfection facilities at the City's three pollution control centres, should this be required as a result of the C.E.C. hearings. Additionally, funds have been included for 1993 of the 1992-1997 Capital Programme to enable the undertaking of additional studies of alternative means of disinfection.

Another issue the C.E.C. hearings will contend with is ammonia, which, in high enough concentrations, can be harmful to fish. Ammonia levels frequently exceed Manitoba Surface Water Quality Objectives (M.S.W.Q.O.) on both rivers within the city. The City contends that Manitoba Environment's standard for

ammonia concentrations, which is adopted from the United States, may not be valid for conditions in southern Manitoba, and has asked for further study on the long-term effect on fish life. If ammonia removal is deemed necessary (a process also known as nitrification), the estimated cost for facilities is $120-$170 million.

Current projects under way to improve the quality of wastewater processing include:

- Construction of a $50 million expansion to the South End Water Pollution Control Centre to improve treatment efficiency and capacity. A new primary clarifier is now in operation.

- Design of a facility to replace the existing West End Water Pollution Control Centre, increasing treatment efficiency and capacity. Construction is expected to commence in autumn 1991 at an estimated cost of $30 million.

Snow Disposal

On average, Winnipeg receives 125.5 cm of snow each winter. To prevent accumulations that would make walking and driving hazardous, the City removes snow from sidewalks and streets and places it in snow disposal sites. Mixed in with the dumped snow are salt, sand and microscopic lead (Pb) particles from vehicle emissions.

To reduce the impact of snow dumping on the environment, the **Operations Department** has acquired new equipment that reduces the amount of salt and sand spread on the streets (See **Salt and Sand**). Lead levels have steadily dropped since the introduction of unleaded gasoline in the 1970s and will drop further now that leaded gasoline is no longer sold in Canada. Disposal sites are cleaned up after the spring melt, and residues disposed of in City landfills.

Until 1989, snow was disposed of by dumping it onto and beside the Red and Assiniboine rivers. After the spring melt, the salt, sand and lead generally stayed on the riverbank, inhibiting the growth of vegetation, making the area unsightly and contributing to riverbank erosion.

Snow is no longer dumped directly onto the rivers and the three riverbank sites remaining - on the plains of the Seine River, Sturgeon Creek and Omand's Creek - are regulated as to how much and how far from the riverbank the snow can be placed. Changes to provincial regulations will not permit snow dumping on riverbank plains past 1992. Snow is also disposed at nine other land based locations around the city.

Research carried out by the **Waterworks, Waste and Disposal Department** in the 1970s concluded that the release of salt and heavy metals into the rivers during snow melt had an almost negligible impact on river water quality.

After concern about potential environmental and health effects from lead in snow dump sites was raised by the media in early 1989, Manitoba Environment studied selected City snow dumps. The tests established that levels of lead and

other metals found in soils at the sites were within proposed residential guideline levels, but expressed concern with respect to the levels of metals found in snow dump meltwater. In terms of the effects of undiluted meltwater on aquatic life, a test determined that serious toxicity was not a problem.

The Province has directed the City of Winnipeg to conduct a snow dump monitoring programme in 1991. Accordingly, water and soil samples were taken this past March through August. A full report will by provided to the Province and made public by the end of the year.

Salt and Sand

To increase winter road and sidewalk traction, the City of Winnipeg uses salt and treated sand (containing 5% salt) to remove snow and ice accumulations. However, along with the increased traction come some unwanted side effects. Salt corrodes vehicles, bridges, roads and buildings and, come spring, it can dry and harm plants.

After trying "no salt" policies, some governments have concluded that the cost of accidents due to not salting is greater than the environmental cost of salting (Manitoba Environment, 1991, p.123).

The **Operations Department** is experimenting with calcium magnesium acetate as an alternative to salt and monitors other municipalities' research activities related to the development of a viable replacement. Some alternatives being explored are sodium formate and polymeric corrosion inhibitor. These chemicals can cost up to fifty times that of salt (Manitoba Environment, 1991, p.123).

Prompted by public concern over the use of salt and sand, in 1990 the Operations Department reviewed its use of these materials. As a result, new automatic hydraulic controls have been installed in half the fleet of salt and sand spreader trucks, reducing the amount of material spread by about 10%.

The department also purchased ten new truck ploughs to be used for snow clearing, including the removal of some snowfall that would otherwise have been cleared using salt.

HOW YOU CAN HELP THE ENVIRONMENT

- You can reduce salt and sand use at home by keeping sidewalks and driveways shovelled.

To keep the boulevards looking green when the snow finally melts, the **Parks and Recreation Department** is investigating more salt-tolerant vegetation, some of which has already been planted along Pembina Highway. There are plans to experiment with salt-tolerant sod along Roblin Boulevard starting this autumn. The department also monitors the research of other cities to find better and

stronger varieties of plants.

Like Winnipeg, the City of Scarborough, Ontario, is also experimenting with calcium magnesium acetate as a de-icer. Scarborough has also reduced the tonnes of salt used per kilometre of road from just under 40 in 1985 to about 14 in 1990. This was achieved primarily by emphasizing ploughing as the main method of snow removal.

NOISE POLLUTION

Excessive sound is a serious hazard to public health, safety and quality of life. As Canadian society increasingly relies on machines to aid in transportation, construction, heating, cooling and other areas, the level of noise we all encounter is increasing as well. Various studies have demonstrated that, in general, high frequency hearing ability has deteriorated over the past few decades.

The City of Winnipeg is determined to control excess noise wherever possible. The City has a comprehensive noise By-law that contains provisions limiting the noise that can be generated by sources like air conditioners, power tools, motor vehicles, radios and animals.

Many City departments are seeking ways to reduce commonly encountered noise. The **Streets and Transportation Department** does the following to reduce the amount of noise pollution from vehicles on city streets:

- Since 1981, assesses for traffic noise as part of preliminary planning for major transportation projects, such as the Chief Peguis Trail (Kildonan Corridor) and proposed transit corridor.

- Traffic noise level guidelines have been in use since 1985 and are part of the subdivision review process. These apply to the development of new residential areas next to existing or future main thoroughfares and construction of major new transportation projects.

- A noise attenuation barrier was installed along Lagimodière Boulevard in 1988 to reduce noise levels for homes in Windsor Park. The City designed and administered the installation of the barriers, while funding came from the provincial government.

Winnipeg Hydro has many substations that generate low frequency noise into surrounding neighbourhoods. Hydro surveyed several of these substations in 1989, verifying that these installations operate within provincial noise standards. Worker exposure to noise at substations is limited through engineering controls and personal protection devices. Noise is monitored to ensure established standards are met.

The **Parks and Recreation Department** considers the effect of noise on

surrounding areas when planning for new softball fields, soccer pitches, playgrounds and other recreational facilities.

By encouraging people to use public transit more often, **Winnipeg Transit** also plays a part in the reduction of noise from vehicles on the streets. Fewer cars on the road mean less noise.

Through a call priority system established in 1990, the **Ambulance Department** has reduced siren noise. Now, approximately 50% of all ambulances are dispatched without sirens.

Winnipeg's Noise By-law and efforts in noise abatement have been in place for over a decade. The City of Calgary is just now planning to establish an environmental agenda that will consider the establishment of greater controls over noise from industry, vehicles and audio equipment.

HOW YOU CAN HELP THE ENVIRONMENT

- Make sure your vehicle has a properly working muffler,

- Loud music may disturb others. In public, please play radios at low volume.

WATER SUPPLY

For more than 70 years, the people of Winnipeg have been able to take for granted that whenever they turn on their water taps, they will receive a plentiful supply of clear, safe, and inexpensive drinking water. The water from Shoal Lake, on the Manitoba-Ontario boundary, is of high enough quality that no treatment is currently required, other than adding chlorine for disinfection and fluoride to help prevent tooth decay. At present, Winnipeg's drinking water meets or exceeds all Canadian Drinking Water Quality Guidelines except, on occasion, for physical and aesthetic aspects such as turbidity (suspended solids), taste and odour. Few other cities of Winnipeg's size are as fortunate to have such a high-quality source of water available nearby. Winnipeggers use about 300 million litres of water daily, enough to fill the Winnipeg Stadium football field to a height of a 17 story building.

Water Quality

To ensure Winnipeggers consistently receive good quality water, the **Waterworks, Waste and Disposal Department** monitors changes in regulations for water quality. The department monitors and assesses many constituents in both the raw water at Shoal Lake and the finished water at the tap.

Winnipeggers will soon be unable to rely only on the favourable situations and forward thinking of the past to continue providing an abundant, safe and inexpensive water supply. Water demand is projected to exceed existing supply, possibly as early as 1997, and as well, repairs are needed to the existing water system. These challenges require new initiatives to assure adequate water quality and supply well into the next century.

Existing raw water quality is maintained through source protection. The department takes an active role in opposing any potential development activity in the Shoal Lake watershed which could potentially deteriorate existing water quality. This has been the case with several mining proposals and a cottage lot development proposal by Shoal Lake Indian Band No. 40. In return for a payment of $3 million from the City and other monies from other sources, the Band agreed to abandon the cottage lot proposal and to the regulation of other activities which could have potential impacts on water quality.

In the case of the recent Consolidated Professor Mines Ltd. mining proposal, no development will be allowed to proceed until an environmental

impact assessment, begun in 1990, assures that water quality will not be adversely affected. The department is actively involved in this process, as with any development proposal.

Current initiatives to ensure a secure source of water for the next decade include aqueduct rehabilitation, expansion of the Deacon Reservoir (just east of the city), enhancement of the pumping facilities at Shoal Lake, upgrading of monitoring equipment, planning for watershed management and promotion of water conservation.

■ Aqueduct rehabilitation will restore structural stability and complete necessary restorations to the 70 year old water transportation system. This programme is expected to extend the life of the aqueduct until at least the year 2040. It is estimated to cost about $130 million over the 15 year rehabilitation period.

Zebra Mussels

The impending spread of zebra mussels from the Great Lakes into Shoal Lake is a concern for the department. Manitoba Environment, in its State of the Environment: Report for Manitoba (1991) estimates the infection of Manitoban waters within two to five years. These mussels reproduce rapidly and grow around any object; their colonies can clog the inside of water intake pipes. When zebra mussels appear in Shoal Lake they would not pose a health hazard, though the taste of the water and efficiency of the water intake operations could be affected. Steps are now being taken to both monitor for zebra mussels and protect the water supply infrastructure against their anticipated arrival.

■ Expansion of the Deacon Reservoir will upgrade current storage capacity from 10 days supply to 20. The City has begun design of the expansion and has applied for project approval under the Manitoba Environment Act and the Manitoba Public Health Act. Public hearings, as required under the Environment Act, are scheduled for January, 1992. Construction is expected to be completed in 1993 at an estimated capital cost of $20 million.

■ Upgrading the pumping facilities will allow the aqueduct to be operated at full flow capacity (386 million litres per day), an increase of 29% over the present, even when lake levels are too low to deliver this quantity by gravity. The estimated cost of this project is about $5 million.

■ The **Waterworks, Waste and Disposal Department** has begun detailed design for the automated monitoring and control of the regional water supply

system. Improvements will be implemented to modernize and enhance operations starting in 1992.

- The City-initiated proposal for a watershed management plan for Shoal Lake calls for cooperation among the City, Manitoba and Ontario governments to ensure the quality of Winnipeg's water source in light of development pressures around and near the lake. Meetings are expected to start in the near future.

- Efforts to promote water conservation are in progress. These include pamphlets - "25 Things You Can Do To Prevent Water Waste" - sent to all Winnipeg households, and advertisements promoting "Water Wasted...Nothing Gained" carried on Winnipeg Transit buses and over radio and television in the summer of 1991.

Water Conservation

A comprehensive study into water conservation has been undertaken by the department. Recommendations for a long-term strategy will be developed by mid-1992. Possible measures could include public education campaigns, revised plumbing codes, retrofitting of existing facilities with water saving devices and revisions to the water rate structure. Recommendations regarding demand reduction by the City will also be developed.

The City is seeking ways to reduce water use at City Hall and other civic buildings. City Hall buildings alone consume more than 35 million litres of water annually - over 152 000 litres per business day.

The Environmental Review of City Hall Report (1990), adopted by City Council, recommends the following:

- That water saving devices be installed in all City facilities, including flow-limiting tap and shower heads and water saving toilets or retrofit devices on existing toilets.

- That a programme of scheduled inspection be implemented for fast repair response for water leaks in City facilities.

- That City staff be educated on how to reduce water consumption through water conservation practices including discouragement of use of toilets as ashtrays or wastebaskets, and fully shutting off faucets.

The Future

Winnipeg faces a rising demand for water due to growing per-capita consumption of about 1% per person per year, similar to other North American cities. This growth in per capita consumption is expected to account for a 50% increase in water demand by the year 2040, while population growth is only expected to account for a 10% increase in demand.

To meet future demands, the **Waterworks, Waste and Disposal Department** has under consideration smaller scale projects to defer large scale capital projects. These include the possibilities of using a ground water source to supplement peak demand and/or further increasing the Deacon Reservoir's storage space. While these options alone will not meet the demand expected in the year 2040, they are low in cost, can be readily implemented, will defer the major cost of building a supplemental water supply source, and will become functional parts of a longer term strategy. Preliminary cost estimates are $20 to $25 million each for the new ground water source and the Deacon Reservoir project.

One option that would provide sufficient water supply until 2040 involves developing a new supply system from either Shoal Lake, Natalie Lake or a local river source. The cost of building a second aqueduct to Shoal Lake is projected to cost $200 to $350 million, while the calculated cost of a pipeline and pumping station from Natalie Lake would be over $100 million. Water from the Assiniboine River is the least costly option, estimated at under $100 million. Costs for treating the water from these sources are in the order of $100 million.

No matter what the future source(s) of Winnipeg's drinking water are, water treatment may become necessary to maintain water quality. The need to treat existing water from Shoal Lake could result from high public expectations about water quality, aesthetics, changing water quality at the source of the water supply and/or trends to higher water quality standards established by regulatory bodies. Based on the above, the department estimates that water quality standards expected to be in place in the year 2000 would require Winnipeg's drinking water to be treated. The projected cost of treatment is in the order of $180 to $280 million in capital costs and another $25 million per year in operating costs.

HOW YOU CAN HELP THE ENVIRONMENT

- Water lawns only when needed and deep soak, rather than sprinkle lightly,
- Properly position lawn sprinklers to minimize watering of paved areas,
- Use a layer of mulch around shrub and flower beds to retain moisture,
- Install low-flow shower heads and use toilet dams.

SOLID WASTE MANAGEMENT

Solid waste is a fact of life. While most is still disposed of in landfills, more and more individuals and organizations are taking steps to reduce the amount of waste created, and/or to find alternative uses for waste products.

In addition to managing municipal landfill sites, the City is also active in other internal and public initiatives to minimize the impact of solid waste on the environment.

Landfill

Winnipeg is fortunate that the clay found below the soil in and around the city is considered one of the best materials to use as a base for a landfill. The Brady Road site is considered an excellent site for a landfill as it offers very good containment of garbage residues and the liquids produced from refuse.

Recently revised provincial regulations will require the City to hold public hearings with regard to expansion of the Brady Road Landfill.

The **Waterworks, Waste and Disposal Department** has an ongoing project to remove accumulated liquids (leachate) from landfill sites. Begun in 1990, this project is expected to grow in scale in the future as the amount of leachate in Winnipeg landfills is much greater than originally anticipated. This project is expected to cost $85,000 in 1991, compared to $80,000 in 1990.

Thirty-six former and active landfills are monitored for methane gas to provide sufficient advance warning of any significant change in gas conditions. Since 1983, there has not been one occasion when the concentration of gas has exceeded the generally accepted standard used by the City.

The City of Winnipeg has the only properly closed landfill site in Manitoba. This former landfill is now Kil-Cona Regional Park and the Harbour View Golf Course and Recreational Complex, operated by the **Parks and Recreation Department**. Widely praised for its concept and design, the park represents a creative solution for landfill rehabilitation. The golf course and pond system are in place, and future plans have been drawn up for a tea house and childrens' adventure island.

While landfills will always be necessary, the successful reduction and re-use of waste will extend the life of a landfill and optimize waste management. Through a planned programme, the Waterworks, Waste and Disposal Department

is involved in the following activities:

- A review of the disposition of former landfill sites is being carried out. As with the former landfills that have already been rehabilitated with landfill gas barriers and/or regrading and landscaping, others will require similar treatment. Also, there will likely be the need for leachate (landfill liquids) control at some sites. Funding in 1992 will provide for planning of further rehabilitative work to protect public health.

- The viability of extracting and utilizing methane gas from landfills as an energy source will be investigated in 1993. There is, according to a consultant's report, sufficient methane gas being produced to make such an undertaking feasible. The cost effectiveness of such a project will be explored.

HOW YOU CAN HELP THE ENVIRONMENT

- Reduce,
- Re-use,
- Recycle, and
- Recover.

Reduce, Re-use, Recycle and Recover

Even though Winnipeg has near ideal conditions for sanitary landfills and sufficient capacity for approximately another 50 years, the City is committed to the four principles of environmental stewardship - Reduce, Re-use, Recycle and Recover. An increasing number of City departments are turning these words into action.

Most civic buildings recycle aluminium cans, and some recycle office paper and telephone books. Plastic bottles are recovered by the **Ambulance Department** and by various library branches, while bulk scrap metal delivered to the City's landfills is recycled through the **Purchasing Department**. Other items, from laser printer cartridges to computer cards and microfiche sheets are recovered and/or recycled by some departments.

By fall of 1991, the City is expected to appoint a Recycling Coordinator, who will be responsible for implementing and monitoring a *City Hall Office Paper*

Recycling Programme and arranging, with local recycling groups, the set-up of further receptacles for aluminium, glass and plastic recycling.

It has been calculated that the average City employee generates about 18 kg of waste office paper per year. This translates into about 13.5 tonnes per year produced in the City Hall buildings alone. In total, The City of Winnipeg used approximately 245 tonnes of paper in 1990; this amount is increasing by 2% annually. To reduce this volume, City departments are recycling office paper, making more use of electronic mail and gradually replacing older photocopiers with machines capable of easily making two-sided photocopies. Used office paper will be recycled in the *City Hall Office Paper Recycling Programme*, scheduled to be in place by November 1, 1991. This programme is considered the first step in an eventual amalgamation of all departmental office paper recycling efforts.

The Purchasing Department is planning to establish a recycling programme for used laser printer toner cartridges, for which there is a ready market in Winnipeg. Contracts to recycle used ethylene glycol (anti-freeze), motor oil and white goods have been awarded by the department (See **Purchasing Policy** for more information).

Other activities which help support the four principles are:

- To reduce the demand for petroleum products, the **Operations Department** reuses 15 000 tonnes of asphalt pavement per year.

- The **Winnipeg Municipal Hospital** is currently evaluating its use of disposable diapers and expects to be able to achieve a 50% to 80% reduction in the number used.

- The **Library Department** encourages patrons to provide their own recycled bags to carry library materials.

Waste Minimization and Recycling

A waste minimization and recycling action plan, approved by **Council** in July 1990, contains a long-term waste minimization strategy for the City. It focuses on cost effective waste reduction, material reuse, and recycling.

Recommendations of the plan include support for pilot recycling projects, composting programmes, public information, waste wood chipping, research and development of markets for post-consumer items, in-house recycling, and a purchasing policy which considers environmental factors. Efforts were directed at measuring the cost-effectiveness of curbside versus depot recyclables collection.

The City's 1991 *Waste Minimization and Recycling Programme*, part of the **Council** approved long-term action plan, includes $1.06 million made available through a surcharge on landfill tipping fees to support the following initiatives:

- continued technical and financial support of household recycling projects (see below),

- pilot waste wood chipping,
- backyard composting pilot projects,
- pilot leaf composting programme,
- public information programmes,
- market development and stabilization initiatives, and,
- investigation of funding options for waste minimization, including increased tipping fees and the possibility of a solid waste utility.

By the end of 1991, the **Waterworks, Waste and Disposal Department** is expecting to have depots established to collect old newspapers for recycling. These depots may be established in cooperation with the Manitoba Soft Drink Recycling Corporation, which is planning to set-up permanent depots for glass, plastic and aluminium recycling.

Winnipeg's planned programme for depot recycling is slightly different than the curbside recycling efforts in other Canadian cities, owing to ample remaining landfill capacity and the Province's plan to place the onus for recycling on distributors of products in the long term.

The department has also received approval to recruit a Waste Reduction Coordinator, who will be responsible for the coordination and administration of the development and implementation of the City's Waste Minimization and Recycling Programme, as well as for development of public information programmes on solid waste environmental issues.

Sewage Sludge

Sewage sludge is the solid residue remaining after wastewater is treated. The City's sewage sludge is rich in agricultural nutrients, particularly phosphorus and organic nitrogen.

Though some sewage sludge has been applied to farm fields for years, until recently this could only be done during

Cover Your Load

In late 1989, Council amended the Solid Waste By-law to provide a surcharge of $50 on the landfill disposal fee for owners of vehicles whose loads were not covered or secured in such a manner as to prevent the contents from escaping as litter during transport.

winter months. However, since July 1990 new facilities allow the **Waterworks, Waste and Disposal Department** to apply treated and partially dewatered sewage sludge from the North End and South End Water Pollution Control Centres to agricultural lands north of the city under a year-round programme called WINGRO.

As a fertilizer, sewage sludge slowly adds nutrients to the soil. To ensure that only good quality material is spread on farm fields, the sewage sludge is sampled and tested. All aspects of the programme are conducted according to Manitoba Environment guidelines.

An additional environmental benefit of WINGRO is a reduction in noxious odour from the sludge drying beds located to the north of the City.

HAZARDOUS MATERIALS

One of the most pressing environmental issues is the prevention of damage to the environment or public health by any material or substance. This involves the use of least toxic materials, proper handling, transport and use of all hazardous materials, keeping hazardous waste to a minimum, and the economic and safe disposal of hazardous waste produced by the City during provision of civic services.

Control and Disposal

Hazardous materials range from common household items like cleaners and insect repellant to industrial toxins, and can be explosive, corrosive, poisonous or have other adverse effects. Because of their inherent dangers, these products require special procedures throughout their life cycles.

In Canada, hazardous materials/wastes are regulated primarily by provincial governments, with municipalities responsible for regulating access to sewer systems and landfills. In Manitoba, over 80% of the hazardous waste generated in Manitoba comes from sources in Winnipeg.

At present, the City has a policy of prohibiting the landfilling of hazardous materials, reinforced where necessary, by provincial and federal regulations. The **Laboratory Services Division** of the **Waterworks, Waste and Disposal Department** is expected to prepare a section for the Solid Waste By-law that would specifically prohibit hazardous materials from being disposed of in landfills.

The **Special and Hazardous Waste Control Branch** of the Waterworks, Waste and Disposal Department is responsible for monitoring the City's landfills and sewer system against breaches of the existing by-law and for ongoing monitoring of industrial discharges to ensure hazardous waste is not illegally disposed.

To keep track of wastes entering the sewer system, plans are under way for the design and construction of two automatically monitored disposal sites for liquid industrial waste hauling trucks. One system is already operational at the North End Water Pollution Control Centre. After construction costs of about $1 million, the expected annual operating cost of this enforcement program is approximately $120,000.

The City has invited the Manitoba Hazardous Waste Management Corporation (M.H.W.M.C.) to investigate Winnipeg as a potential site for a proposed $30 million hazardous waste treatment and disposal facility. Initial siting

investigations are under way across the province. Public hearings will precede final site selection. In the mean time, the **Works and Operations Division** cooperates with the M.H.W.M.C. to resolve hazardous waste disposal problems.

Reducing Hazardous Waste

The **Purchasing Department** is working with suppliers to reduce the amount of regularly used materials that go to disposal. Activities include:

- Changing specifications to allow high density, high molecular weight polyethylene garbage bags to reduce the mass of waste plastic destined for landfills,
- Using tread wear as an evaluation criterion for Police Department tires, resulting in fewer waste tires,
- Selling used lubricants from City vehicles and equipment for energy recovery, netting the City $3,400 per year from this resource,
- Recycling ethylene glycol anti-freeze.

The City participates in a province-wide waste exchange. Infrequently occurring hazardous wastes, such as left-over paint or certain pesticides, are offered for sale or trade. If a substance is not purchased or exchanged, it is properly disposed of according to provincial regulations.

The **Winnipeg Municipal Hospital** and City **Health Department**, which currently dispose of their hazardous wastes (mostly disposable instruments contaminated with bodily fluids) through sterilizing and landfilling, are considering building an incinerator or participating in a proposal to construct an incinerator for all hospitals in the province. The **Waterworks, Waste and Disposal Department** is currently preparing a Biomedical Waste By-law prohibiting the disposal of untreated biomedical wastes at City landfill sites. This will provide better protection for both City employees and the environment.

The federal Transportation of Dangerous Goods Act (1985) and the Manitoba Health Hazards Regulations (1989) have had a dramatic impact on the use, transfer and disposal of a large number of hazardous materials used by **Winnipeg Transit** and other City departments. Costs associated with storage and transportation requirements led to the re-examination of the need for some of these materials. Many were not required, and less hazardous substitutes were found for others.

Since the Province opened a permanent collection depot for household hazardous wastes in autumn 1989, the City's involvement in this area has been minimal.

HOW YOU CAN HELP THE ENVIRONMENT

- Do not put household hazardous wastes like paint, turpentine, used motor oil and anti-freeze in your garbage or down the drain.
- Take them to the Province's household hazardous waste depository at 745 Logan Avenue.

Environmental Emergencies

The **Fire Department's** Hazardous Materials Response (HazMat) Unit is called out to emergencies such as chemical spills within Winnipeg. This unit stabilizes and controls any hazards occurring in an emergency incident and cleans up, if the incident is relatively minor. The HazMat Unit was dispatched to 45 incidents involving hazardous materials in 1990, up from 33 in 1989. Manitoba Environment - responsible for clean-up of more complex spills - is notified of every call that requires the HazMat Unit to go into action. The **Special Wastes Control Branch** of the **Waterworks, Waste and Disposal Department** frequently attends such environmental emergencies to ensure that both the public and the City's sewer infrastructure are protected.

Did You Know?

Fire fighters in the HazMat Unit are specially trained in hazardous material clean-up procedures and wear totally encapsulated protection suits with self-contained breathing apparatus to protect them from any exposure to liquids or fumes. Each suit costs approximately $6,000.

Heavy Metals

The City's regular wastewater monitoring and enforcement programme targets a broad range of toxic and other substances. Among these are heavy metals, which do not break down in the environment and can accumulate in the food chain. The City monitors the wastewater of some electroplating establishments which commonly use and are a major source of heavy metals in the sewer system.

Winnipeg Hydro uses mercury as a connection material in electrical switches. Before turning an old switch into scrap, the mercury is removed and

disposed of in an environmentally safe manner.

Asbestos

Asbestos is a naturally occurring mineral that has the ability to resist a large amount of heat. As a result of these properties, until recently it was widely used as an insulating material. In the late 1970s, evidence started to build that long-term exposure to asbestos fibres in the air could cause disease, most notably, lung cancer. Since that time, the use of asbestos has steadily decreased and efforts to remove this material from buildings have been undertaken around the world.

The **Civic Properties Department** is charged with carrying out the City's long-term goal of totally asbestos-free civic buildings. Since 1981, working under provincial guidelines, this department monitors, controls and removes asbestos fibres in civic buildings. Removal and control are costly. To date, several hundred thousand dollars have been spent to ensure asbestos exposure in civic buildings is minimized. In buildings constructed before asbestos was identified as a problem, asbestos removal is an integral part of any refurbishment, remodelling or demolition. With regard to the latter, the City follows the "General Duty" clause of the Provincial Workplace Safety and Health Act that requires employers to take all "reasonable" steps to protect workers.

Winnipeg Hydro's Amy Street Steam Plant, scheduled to be torn down in 1992, will have all asbestos removed prior to demolition. This is City practice with all civic buildings, although there are no specific regulations requiring that this be done.

Until 1986, when its use was suspended in Winnipeg, the City installed asbestos-cement water pipes. About 600 km of these pipes are still in use, and are replaced by PVC plastic pipe as required. Many North American cities use asbestos-cement water pipes and no health effects have been attributed to asbestos in the pipes.

Canada does not have any guidelines for asbestos fibres in drinking water. The United States Environmental Protection Agency has a recommended limit of 7.1 million long-fibres per litre. Samples taken during regular monitoring of drinking water at various Winnipeg locations in 1981, 1983, 1984 and 1988 indicate that the amount of asbestos long-fibres is significantly below the U.S. limit. Short fibres, which have on occasion exceeded U.S. recommended limits for long fibres, are not considered to be a health hazard by either Canadian or U.S. government authorities. The long-term (over 20 or 30 years) health effects, if any, of asbestos fibres in drinking water are at present unknown and a point of debate among scientists.

Polychlorinated Biphenyls

Polychlorinated biphenyls (PCBs) are synthetic chemical compounds consisting of chlorine, carbon and hydrogen. Because of their very good insulating and fire-resistant properties, they have been used in a wide variety of industrial

and consumer related products. PCBs were used as insulating/cooling fluid in transformers and capacitors as well as in hydraulic fluids, surface coatings for carbonless paper, plasticizers in sealants, caulkings, synthetic resin, rubber, paints, waxes, asphalt and as flame retardants in lubricating oils.

Although PCBs are often regarded by the public as highly toxic, at normal temperatures they are chemically stable, and do not break down in the environment. However, when burned at low temperatures, they produce highly toxic by-products.

Everyone is unavoidably exposed to traces of PCBs but there is no clear evidence that low level PCB exposure affects human health. PCBs can be inhaled, swallowed or absorbed through the skin. In high concentrations, they can cause a number of health problems, including liver damage and nerve disorders.

The manufacture of PCBs and their use in new products was prohibited in Canada in 1977. Since then, federal and provincial governments have established strict regulations for the use, transportation, storage, monitoring and phase out of PCBs and PCB contaminated equipment. The federal deadline for complete phase out is 1993.

PCB Limits

According to the Federal Government:

- low level contamination is defined as 500 ppm PCB (parts per million) or less,
- a concentration of 50 ppm PCB or less is not considered to be contaminated.

Although **Winnipeg Hydro** has never specified PCB as a coolant in its equipment orders, the department expects about 15% of its equipment to be contaminated and has a programme to identify these pieces. Approximately 12 000 transformers require testing. Equipment containing over 500 litres of contaminated oil will have the oil removed, while equipment containing less than 500 litres is checked as part of ongoing maintenance.

Priority has been given to cleaning up contaminated equipment in operation within "sensitive areas": schools, shopping centres, senior citizens homes, health care facilities, food processing plants and office buildings. These sensitive areas are expected to be PCB free by October 1991.

Contaminated transformers are being cleaned up through a process known as retrofilling. This involves the removal of the PCB contaminated oil from the unit, flushing of the unit with a non-PCB fluid, then refilling the unit with an alternative non-PCB fluid. Oil samples are taken after 90 days and retrofilling repeated, if necessary, until the level of PCBs is below 50 ppm.

The removed oil is decontaminated in cooperation with Manitoba Hydro through its PCBX decontamination unit and returned to Winnipeg Hydro for reuse. This eliminates the need for a disposal facility and the need to purchase

replacement oil. To date, Winnipeg Hydro has decontaminated and reclaimed approximately 157 000 litres of oil.

Until disposal facilities become available, equipment containing non-processable PCBs, such as solids, is barrelled and stored in accordance with both federal and provincial guidelines. Winnipeg Hydro has approximately 42 tonnes of PCB contaminated solid waste in storage. In comparison, industry in Manitoba has 588 tonnes of PCB material in use and another 200 tonnes in storage.

Total expenditures for PCB clean-up by Winnipeg Hydro amounted to $110,005 in 1989 and $217,245 in 1990.

Transportation

Regulations on the transportation of hazardous materials and dangerous goods are primarily the responsibility of the provincial and federal governments. However, the City has conducted an initial study into the feasibility of establishing hazardous materials or dangerous goods routes in the city. By limiting the transport of hazardous materials to designated routes with low accident occurrence histories, and away from sensitive areas like hospitals and schools, such routes would reduce the probability and effects of accidents. Emergency planning and response would also be more effective by concentrating on defined routes instead of the entire city.

By establishing a dangerous goods route, the City would be placing itself on a comparable level with Calgary, Edmonton and Regina, which have already established such routes.

The total cost of establishing a dangerous goods route, including the study, personnel and implementation, is estimated at $375,000.

Employee Education

As part of its overall responsibility to ensure safe and healthy working conditions for its employees, the City follows the federal Workplace Hazardous Materials Information System (WHMIS). This system requires proper labelling, storage, and monitoring of all hazardous materials. Since the start of the programme in 1989, thousands of City workers have received WHMIS training - a vital component of the programme. Those who come directly in contact with hazardous materials receive priority for training in WHMIS and in proper handling of these substances.

As a part of WHMIS, the City's **Employee Occupational Safety and Health Division's Industrial Hygiene Branch** reviews each new product for potential hazards prior to purchase and advises as to its acceptability in the workplace.

The Employee Occupational Safety and Health Division, the **Special and Hazardous Waste Control Branch** of the **Waterworks, Waste and Disposal Department** and the **Purchasing Department** form a proactive *Standing Hazardous Waste Action Committee* to initiate and assist civic departments on proper control and disposal procedures. An active city-wide exchange procedure for hazardous

materials is under way to dispose of as many of the identified hazardous materials as possible in order to reduce hazardous waste to a minimum. This ongoing procedure will be complemented by a pilot "Hazardous Waste Days" project scheduled for the fall of 1991 to centralize the transfer and disposal of hazardous waste. The economic advantages of consolidating waste disposal are significant and statistics on quantities and projected savings will be available for both these pilot procedures by the fall of 1992.

The Employee Occupational Safety and Health Division's Industrial Hygiene Branch is expected to complete the process of cataloguing and creating a computerized inventory of all hazardous materials and wastes within City departments by the end of 1991.

In addition to WHMIS training, the City also trains employees for Transportation of Dangerous Goods certification. This training concentrates on proper procedures for packaging and moving hazardous materials.

RENEWABLE RESOURCES

Renewable resources are often those most easily taken for granted. Winnipeg is graced with considerable green space and some unique habitats. Within its boundary, the city hosts a range of wildlife species, including songbirds, water fowl, raccoons, and more than 500 white tailed deer - most of which live in the Assiniboine Forest.

The City is committed to responsible management of these valuable natural resources, for use and enjoyment now and in the future.

Tree Management

The planting and development of trees are promoted throughout Winnipeg by the **Forestry Branch** of the **Parks and Recreation Department.** Trees are recognized for their aesthetic values as well as for providing shade, cooling, filtering air pollutants, producing oxygen, converting carbon into dioxide organic compounds, giving protection against erosion - in short, improving the general well-being of the environment. Winnipeg has some natural forest along the Red and Assiniboine Rivers and in isolated patches of woodland throughout the city, but most vegetation consists of planted trees and shrubs on private land, with large blocks of trees on boulevards, in City parks and in the Assiniboine Forest. The forest is the largest "green" section of Winnipeg at 287 hectares, and is managed by the Parks and Recreation Department.

The department also encourages tree management on public, riverbank and private lands to keep trees healthy. As part of its ongoing responsibility to the public, the Forestry Branch offers a telephone inquiry service through its "Tree Line".

Dutch Elm Disease

Winnipeg has North America's largest number of publicly owned elm trees, over 63 000 of them, with an additional 120 000 trees located on lands not owned by the City. The elms of Winnipeg not only provide beauty and shade, but help protect surrounding soil from erosion and reduce global warming by collecting carbon dioxide.

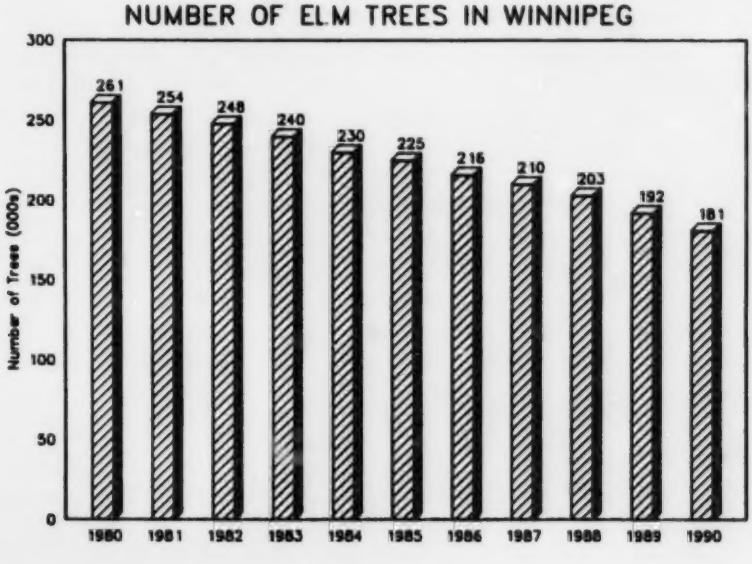
For over a decade, Winnipeg's elms have been under attack from Dutch elm disease (D.E.D.). Carried by the elm bark beetle, this disease is a fungus capable of killing a tree within weeks. Left uncontrolled, it can destroy up to

80% of a region's elm trees.

To combat the disease, the City of Winnipeg has implemented an integrated D.E.D. control programme, consisting of the quick removal of dead and diseased trees, effective elm bark beetle control, and public awareness campaigns emphasizing the need to maintain private elms in a healthy condition. There are by-law restrictions on storing elm firewood. In an effort to keep Winnipeg "green," a new tree is planted for every infected elm tree removed from city street boulevards.

The City's programme has very successfully slowed elm losses due to the disease to less than 2% annually. Dutch elm disease losses in 1990 (3 765 trees) were below the 1989 levels (3 859 trees). However, the confirmed number of infected trees rose from 1 174 in July 1990 to 1 845 in July 1991, an increase of 57% in one year, a matter of concern to the City.

Actions to control D.E.D. are very important and cost effective. Municipalities that have ignored the integrated approach, like Minneapolis-St. Paul, have later had to spend much more than the cost of D.E.D. control to remove thousands of standing dead trees. Based on the Minneapolis-St. Paul experience, if Winnipeg's D.E.D. programme were eliminated or significantly reduced, the cost for removing dead and diseased trees would far exceed the $1.9 million spent by the City and Province in 1990 for this programme. This year, the City faces a 50% reduction in funding from the provincial government.



Tall Grass Prairie

The City of Winnipeg can take pride in the fact that it is internationally

recognized as a pioneer in preservation of tall grass prairie, an endangered habitat.

In the last century, tall grass prairie dominated southern Manitoba's landscape. Today, it is the most threatened ecosystem in North America, existing in small, isolated pockets. Urban development and fire have reduced in 100 years what existed here for almost 10 000 years.

About 13 hectares of tall grass prairie are preserved at the Living Prairie Museum, operated by the **Parks and Recreation Department.**

During 1990, the department took its commitment to conservation of this special habitat one step further by supporting independent research into methods for practical restoration and management of tall grass prairie, and for the planting of native prairie plants. Research will be conducted in Kil-Cona Park in the northeast corner of the city, one of three sites chosen in the province.

The Bradley Prairie, located in Transcona, represents about 12 hectares of "best quality" tall grass prairie. The land where this scarce natural resource is located is scheduled to be used for a transportation corridor, with construction starting in 1992. The Parks and Recreation Department, in cooperation with the land developer and the Manitoba Naturalist Society, is working to save as much of the Bradley Prairie as possible.

The department is also restoring about 10 hectares of Little Mountain Park, 2.25 km northwest of Inkster and Route 90, to its original state of tall grasses and wild flowers.

Composting

City staff at Assiniboine Park are composting fallen leaves and vegetable wastes from the Conservatory Restaurant to produce humus that is later incorporated into the park's gardens. A second compost pile is scheduled to be started this autumn. The Park also receives wood chips from the City's **Forestry Branch** and spreads them into shrub beds.

In 1990, the **Parks and Recreation** and **Waterworks, Waste and Disposal Departments** collected about 8 000 trees through a city-wide *Christmas Tree Recycling Programme*. These were turned into mulch and wood chips. People who brought in their trees received a quantity of mulch and a certificate to be exchanged for a seedling in the spring. This programme is scheduled to be repeated in 1991.

The City also has an ongoing programme for the public to have fallen trees mulched into chips.

OTHER ACTIVITIES

Aesthetics

The importance of aesthetics as an environmental issue cannot be overlooked. In addition to safety and health concerns discussed elsewhere in this report, an aesthetically pleasing environment enhances well-being and contributes to a desirable quality of life for Winnipeggers. To this end, in addition to those aesthetic concerns addressed in all City planning decisions, the City has undertaken the following initiatives:

- The City of Winnipeg has a programme for aesthetic improvement known as *Image Route Enhancement*. This provides for visual upgrading of the city's principle routes over the next two decades and will result in a substantially improved image of the city for both residents and visitors. This enhancement compliments the *Take Pride Winnipeg!* public awareness campaign and Council's recently adopted ***Guidelines on Aesthetics in Public Works Projects***.

- *Take Pride Winnipeg!*, a cooperative initiative between the City, business and labour launched in the fall of 1990, encourages citizens to get involved in beautifying the city by planting trees and flowers, cleaning up litter and by painting buildings and fences. The campaign goal is to have Winnipeg recognized as Canada's cleanest city.

As part of *Take Pride Winnipeg!*, the **Parks and Recreation Department** has increased:

- turf renovations and watering on Pembina Highway and Portage Avenue,
- litter clean-up on major routes leading into the city,
- spring boulevard clean-up,
- tree planting and maintenance, and
- boulevard improvements.

■ Similarly, the **Works and Operations Division** has increased regional street sweeping, placed and maintains new litter containers around the city and initiated a public relations programme to develop business and community participation in *Take Pride Winnipeg!*

The ***Guidelines on Aesthetics in Public Works Projects*** indicate Council's commitment to fund aesthetic enhancement in conjunction with every major construction or reconstruction project - such as bridges - in the capital budget.

■ In terms of large capital projects, the **Streets and Transportation Department** in cooperation with the **Parks and Recreation Department** undertook several environmental initiatives in 1990 to provide enhanced landscaping of city streets, particularly along major routes. Some of the work included architectural finish on structures, wildflower seeding, feature signs, and additional shrubbery and sodding.

At present, there is no city by-law to protect aesthetic concerns with regard to the protection of rivers and creeks, although riverbanks in the downtown are subject to design controls.

Winnipeg - Manitoba Joint Committee on Environmental Issues

This committee, whose members come from upper levels of administration in both governments, has as its objective the establishment of a formal mechanism for more effective communications between the City and the Province. Since its first meeting in January 1991, committee discussions have included sludge treatment operations, biomedical wastes, and the proposed hazardous waste treatment facility for Manitoba.

Public Education

In addition to initiatives outlined elsewhere in this report, the City sponsors educational programmes for the public that reflect conservation themes. These include awareness of endangered species and recycling programmes at the Living Prairie Museum, Little Mountain Park, the Assiniboine Forest and the Assiniboine Park Zoo.

The **Planning Department** plans to introduce a "green newsletter" by the end of 1991, detailing efforts employees can take at home and at work to assist the environment. (See **Reduce, Re-use, Recycle and Recover** under **Solid Waste Management** for more information on internal activities.)

Energy Management

The City of Winnipeg actively promotes the reduced use of electrical energy, and since 1986 has had an *Energy Management Programme* in place. Currently administered through **Winnipeg Hydro**, this programme continues to reduce energy use, improve energy efficiency and reduce utility operating costs. Savings in 1990 were approximately $800,000, with an accumulated saving of $2.5

million since the start of the programme. The initial investment required to start the programme has been paid back. Energy and environmental savings will continue to increase in future years.

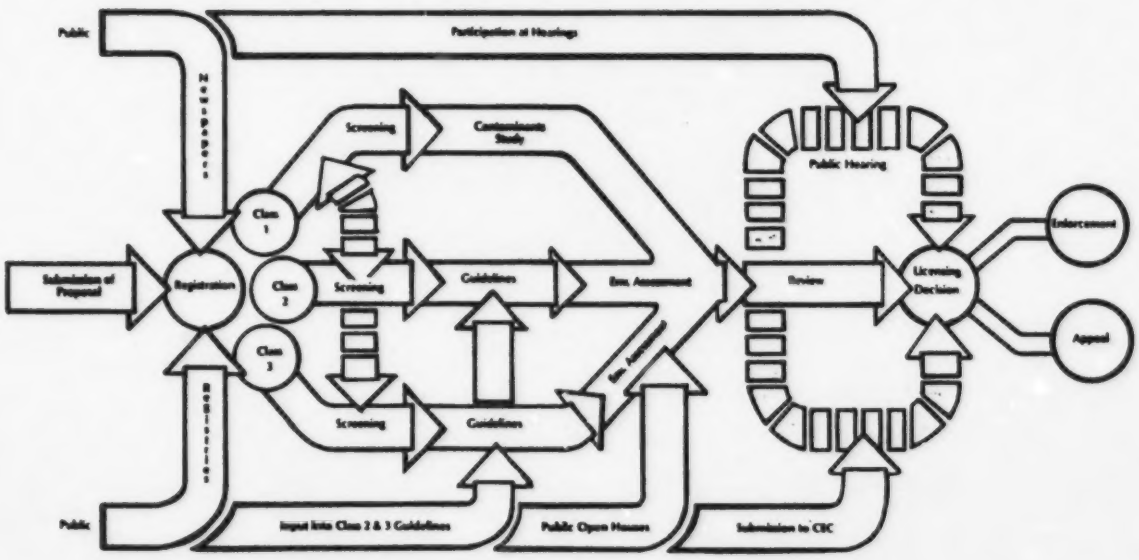
In November 1990, Winnipeg Hydro completed a five year programme to replace all incandescent street lighting fixtures in its distribution area with more efficient and reliable high pressure sodium lamps. In total, 3 809 lamps were converted at a cost of $770,000. The energy savings alone will pay for the conversion by the end of 1992. All future savings after 1992 will directly affect the dollars used to pay for street lighting.

Further street lighting programmes are currently being considered, in order to save electrical energy and possibly delay future hydro developments by Winnipeg Hydro and Manitoba Hydro. Winnipeg Hydro is investigating the replacement of all existing mercury vapour lighting units with high pressure sodium units. Replacement costs over 10 years are expected to cost $1 million but would pay for themselves through energy savings alone.

Winnipeg Hydro has recently adopted the "Power Smart" programme which identifies energy efficient products and procedures. The programme goal is to reduce the growth in demand for electricity.

Environmental Impact Assessment Process

The Manitoba Environment Act (1988) requires that all planned, and some existing, City developments (such as proposed bridges or existing landfills) that may have a significant effect on the environment undergo an *Environmental Impact Assessment (EIA)* as part of the licensing process. Such *EIA* studies are major and complex undertakings which add substantially to the cost and time required to carry out these projects.



All *EIA* studies must address a wide range of environmental concerns, including:

- the type, quantity and concentration of pollutants to be released into the air, water and/or soil,
- impact on wildlife, fish and other aquatic animals,
- impact on vegetation,
- impact on surface water and groundwater,
- socio-economic implications arising as a result of the environmental impacts.

An *EIA* for the proposed new Charleswood Bridge is complete, and has been submitted to Manitoba Environment. Public hearings held by the Clean Environment Commission began in July 1991 and are scheduled to continue in October, 1991. Subsequently, Manitoba Environment will determine whether or not an environmental license for this project should be issued, and will specify any related conditions. A decision is expected early in 1992.

In view of their structural conditions, over the next decade the City proposes to replace the Provencher, Main Street and Norwood Bridges. An *EIA* study for the Provencher Bridge is currently being conducted and should be completed by the end of 1992. The total estimated cost for the Charleswood and Provencher *EIA* studies is $275,000. If the projects are to be built on schedule, *EIA* studies for the Main and Norwood Bridges would have to be completed, and licenses issued by mid-1993. An *EIA* study for the proposed Southwest Transit Corridor will also start within a year.

Environmental Review of City Hall

The *Task Force on Environmental Review of City Hall* was established in late 1990 with the goal of reducing energy use and the creation of solid waste.

Containing recommendations for the short, medium and long term, the Task Force report also addresses the need to reduce, re-use, recycle and recover. Specifically, the report covers the following:

- recycling of newspapers and other office paper,
- use of environmentally-sound cleaning and building products,
- reductions in energy use,
- indoor air quality issues,

- hazardous waste issues,
- ozone depleting substances,
- transportation,
- environmentally responsible procurement.

Although focusing on City Hall, these recommendations can be applied to other buildings and facilities. Many of these issues will have an impact on future City budgets.

Government Legislation and Regulation

The environment in Canada is a shared jurisdiction between the Federal and Provincial governments. Federal legislation often serves as a model for the provinces.

City operations are primarily subject to control by provincial, but also by Federal and civic, statutes and regulations, many of which have been proclaimed within the past five years. In response to public demand for tougher environmental standards, governments will likely enact more legislation in years to come.

The major pieces of provincial environmental legislation (and accompanying regulation) affecting the City of Winnipeg include:

- **Manitoba Environment Act (1988),**
- **Workplace Safety and Health Act (1976),**
- **Dangerous Goods Handling and Transportation Act (1984),**
- **Waste Reduction and Prevention and Consequential Amendments Act (WRAP) (1990).**

The **Manitoba Environment Act** requires all major developments to undergo licensing proceedings. Some City departments and their activities that are affected by this rule include **Waterworks, Waste and Disposal** (waste water treatment plants and landfills) as well as **Streets and Transportation** (proposed bridge construction).

The **Workplace Safety and Health Act** directly affects workplace conditions for all City employees, while the **Dangerous Goods Handling and Transportation Act** regulates the transport, storage and handling of dangerous goods and hazardous wastes as well as proper environmental accident response procedures.

The **WRAP Act** establishes the mechanisms necessary to reach the

provincial objective of a 50% reduction in the amount of solid waste in Manitoba by the year 2000. Future efforts to achieve this goal may include waste reduction programmes for specific products and materials, and the establishment of deposits and/or fees for landfill wastes, all of which would have a financial impact on the City.

Some City departments must comply with federal regulations as well as provincial ones, while others choose to do so voluntarily. For example, **Winnipeg Hydro** obeys PCB regulations from both governments while the **Waterworks, Waste and Disposal Department** uses Health and Welfare Canada's Canadian Drinking Water Guidelines for Winnipeg's drinking water, even though the City is not legally bound to do so.

The Federal government's ***Green Plan***, a strategy to achieve sustainable development could involve City participation in a proposed study on water use, pollution, soil conservation and wildlife habitat in the Red and Assiniboine River basins (***Green Plan***, 1990. p.38). The City may qualify for funding under a section of the ***Green Plan*** that sets aside federal monies for environmental initiatives. Another part of the ***Green Plan*** that could potentially affect the City proposes a Canadian Safe Drinking Water Act to establish formal quality standards for drinking water.

Winnipeg also has several by-laws concerning the environment. Among these are the:

■ **Sewer Utility By-Law (5058/88)**	Controls what substances may be placed in the sewers and watercourses and establishes penalties for violators
■ **Solid Waste By-Law (1340/76)**	Controls what substances are allowed in landfills and establishes penalties for violators
■ **Noise Control By-Law (2480/79)**	Establishes limits for sound emissions and penalties for violators
■ **Anti-Litter By-Law (1075/75)**	Regulates the throwing or depositing of litter
■ **Waterworks By-Law (504/73)**	Establishes controls for preventing contamination of the City's water supply
■ **Biomedical Waste By-Law (Proposed)**	Would provide regulations and a legal basis for the City to control how biomedical wastes are

disposed.

Insect and Weed Control

Insecticides and Herbicides

Biological insecticides, first introduced for the control of mosquito populations, have been used by the City since 1985. An *Integrated Pest Management Programme* has been implemented at the Assiniboine Park Conservatory to reduce the amount of chemicals used for pest control. This programme involves the use of predatory insects and parasites to maintain plant-eating pest populations at acceptable levels.

The **Parks and Recreation Department** relies completely upon the use of non-chemical biological insecticides for cankerworm control and, where effective to do so, for mosquito larval control.

To control unwanted vegetation, **Winnipeg Hydro** uses human labour (manual weeding) and federally regulated chemical herbicides applied by trained and certified crews. The use of chemicals is under constant review, to ensure that the safest and most effective products are used. In the future, as more environmentally sound herbicides become available, they will be assessed and considered for use.

Mosquito Control

Every year, Winnipeggers do battle with the 38 species of mosquito found in the city. In 1991, the battle took on historic proportions as the mosquito population soared to record numbers, with as many as 50 000 caught in one trap in one night. The highest one night average of 4 626 mosquitos per trap was also set in 1991, almost five times the previous record.

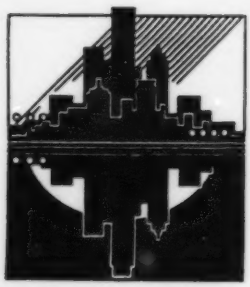
For the past 15 years the **Insect Control Branch** has continuously worked for the most effective, economical and environmentally acceptable mosquito control programme possible. Each year this branch surveys mosquito breeding grounds and monitors adult mosquito traps and controls them through larviciding and adulticiding (fogging).

The larviciding programme involves spreading either chemical insecticide, bacterial insecticide or mineral oil onto mosquito breeding waters. The branch views mosquito source reduction and larviciding as the most effective and environmentally acceptable methods of mosquito population control. In 1991, a total of 23 298 hectares were larvicided at a cost of $508,588.

Those mosquitos that survive to become adults face City adulticiding efforts. When the number of mosquitos caught in traps averages over 25 for three consecutive nights, the City may start fogging operations, using malathion. This chemical, like those used for larviciding, is registered by the Pesticides Directorate of Agriculture Canada and is administered by fully trained workers. Fogging operations covered 160 790 hectares and cost $ 292,922 in 1991. In total, the City spent $882,831 on mosquito control in 1991, up from the $690,434 spent in 1990.

Winnipeg and Edmonton are the only major Canadian cities to have mosquito control programmes, and only Winnipeg conducts residential fogging. As this has been a matter of debate for some time, the City recognizes the right of property owners not to have their property fogged. This year, over 975 properties were exempted from fogging operations by request.

Plan Winnipeg



Plan Winnipeg, the City's "official plan", addresses the questions of what we want our city to be and how to make it happen, through a series of comprehensive policies and objectives.

The City of Winnipeg Act requires that the plan, first adopted in 1986, be reviewed every five years. Accordingly, under the banner of ***Review '92***, **Council** has undertaken an overall review of ***Plan Winnipeg***. Responsibility for the preparation and review of the plan rests with the **Planning Department.**

Review '92 will reinforce those components of the plan which are effective, will strengthen those areas which are weak, and will address emerging issues and concerns.

Plan Winnipeg will be expanded to include a greater emphasis on policies related to environmental stewardship, social equity, and economic development, in addition to urban development management and urban image issues.

Each of these five issue areas has been assigned to a sectoral committee made up of two councillors and representatives from the community.

In reference to environmental issues, the *Environmental Stewardship Committee* recognizes that the City has a distinct role to play in preserving the quality of our environment, and has identified six key issues to be examined and reported on more fully. These include:

- **Environmentally Responsible Decision Making**
  Environmental considerations must become an integral part of the City's decision-making processes. Whether operational, social or economic, decisions must be guided by policies reflecting federal and provincial laws, public concern for the environment and worldwide and local environmental considerations and scientific knowledge.

- **Waste Management and Reduction**
  The City should continue and expand its programs and measures to reduce waste at source, to encourage and regulate recovery and recycling efforts, and to take an active role in facilitating and regulating collection, transport, processing and disposal of hazardous wastes in the city.

- **Sustainable Development**
  The City must ensure that urban development and the

accommodation of change meets the needs of today without compromising the ability of future generations to meet their own environmental objectives.

■ **Drinking Water Source Protection and Conservation**
Strategies for the protection of the Shoal Lake Watershed from pollution sources must be a high priority, as well as water conservation policies to delay the need for a new aqueduct and treatment plant.

■ **Protection and Enhancement of River Environment and Water Quality**
Winnipeg's rivers are recognized as among its most valuable natural resources. Sensitive controls of river use and adjacent development must be employed to ensure future enjoyment of this resource.

■ **Protection and Management of Existing Natural and Man-Made Special Places**
Pockets of wildlife habitat, natural flora and fauna, riverbanks, parks, streets and squares, heritage buildings, distinct districts and other character areas give Winnipeg its special flavour and help make it a desirable place to live in and to visit. Sound management preservation and expansion of these assets is essential for the City's economic and social well-being.

Review '92 is relying heavily on public consultation for its direction, including representation from the three levels of government, as well as industry, special interest groups, academia and the community at large. The process also depends greatly on the cooperation and input of civic departments. The results of ***Review '92*** are anticipated by the fall of 1992.

Purchasing Policy

In 1990 Council approved a ***Purchasing Policy with Respect to Sustainable Development and Environmental Issues***. This policy encourages life-cycle analysis, including factors such as environmental impact, to evaluate products and services. Materials which facilitate reduction, re-use, recycling and/or recovery, and are consistent with an environmentally-sound waste management system may be purchased, provided the benefits can justify their often higher cost.

Part of the Purchasing Department's criteria for purchase of recycled office paper is that the product have the *Environmental Choice Programme's* approval. Products approved under this programme have been examined throughout their life-cycle and have been determined by the Canadian Standards Association to cause the least negative environmental impact. A decision is expected later this year on whether to include *Environmental Choice* approval in the criteria for purchase of small non-rechargeable batteries.

Significant results have already been obtained in terms of contracting for supplies such as tires and batteries, and in disposal of materials such as waste oils in a manner that is less destructive to the environment. Plans are under way to set priorities and strategies for other commodities such as cleaning supplies, chemicals, and wood products.

Through membership in the *Association of Canadian Cities for Environmentally Sound Strategies (ACCESS)*, the department cooperates with other major Canadian cities to gather and share information about the environmental soundness of various products commonly bought by municipalities.

ENVIRONMENTAL CHOICE

■ *Environmental Choice* is an Environment Canada supported programme to help consumers find products which do the least amount of harm to the environment. Approved *Environmental Choice* products are identified with a logo on the package.

Environmental Choice and the logo are official marks of Environment Canada.

Works Consulted

In addition to internal sources, the following documents were consulted in the preparation of this report.

Canada. *Canada's Green Plan: Canada's Green Plan for a healthy environment*, 1990.

Manitoba. Manitoba Environment. *State of the Environment: Report for Manitoba, 1991.*

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